Solar Install in Town

21 FOUNTAIN AVE

Why did we consider solar?

- Family of 5, soon to be 6
- Electric bills close to $2k/year
- Summer hit almost $400 in a month
- I work in Smart Building industry – would be nice to practice what I preach
- There was a guy at Home Depot selling it – I have trouble saying no to things being sold at Home Depot.

How did this happen?

- I talked to the vendor at Home Depot, they told me they couldn't work in RI yet. This made me want it more.
- Kept asking every time I was there.
- Started doing research – understanding the difference between lease and buying panels.
- Found RGS – submitted an inquiry online
- Did the web evaluation and got some initial estimates.
- Did a lot of research and my own calculations.
- Asked my salesman A LOT of questions.

What did we figure out?

- There were two programs, the Feed In Tariff (FiT) and the grant
- I had good exposure and could offset 100% of my consumption
- Roughly $26k system, payback in 14mo with incentives
- The FiT made the most sense

System Size:	**5.61 kW**
Modules: (22) Silfab - SLA 255 P	
Inverters: (22) Enphase - M215	
Year 1 Production:	**7,725 kWh**

I didn't believe their numbers….

- This is what RGS sent me

Year	PBI	Annual Savings	Cash Payment	Annual Payments	Annual Cash Flow	Total Cash Flow
1**	$ 1,834.68	$ 1,359.59	$ 250.00	$ 1,809.77	$ 1,134.50	$ 1,134.50
2	$ 1,784.92	$ 1,393.38		$ 1,809.77	$ 1,368.53	$ 2,503.03
3	$ 1,734.36	$ 1,427.97		$ 1,809.77	$ 1,352.56	$ 3,855.59
4	$ 1,682.98	$ 1,463.38		$ 1,809.77	$ 1,336.59	$ 5,192.18
5	$ 1,630.76	$ 1,499.63		$ 1,809.77	$ 1,320.62	$ 6,512.79
6	$ 1,577.68	$ 1,536.74		$ 1,809.77	$ 1,304.64	$ 7,817.44
7	$ 1,523.72	$ 1,574.72		$ 1,809.77	$ 1,288.67	$ 9,106.11
8	$ 1,468.87	$ 1,613.60		$ 1,809.77	$ 1,272.70	$ 10,378.81
9	$ 1,413.10	$ 1,653.40		$ 1,809.77	$ 1,256.73	$ 11,635.54
10	$ 1,356.40	$ 1,694.13		$ 1,809.77	$ 1,240.76	$ 12,876.30
11	$ 1,298.74	$ 1,735.82		$ 1,809.77	$ 1,224.79	$ 14,101.09
12	$ 1,240.10	$ 1,778.49		$ 1,809.77	$ 1,208.82	$ 15,309.90
13	$ 1,180.47	$ 1,822.15			$ 3,002.62	$ 18,312.52
14	$ 1,119.81	$ 1,866.83			$ 2,986.64	$ 21,299.16
15	$ 1,058.12	$ 1,912.55			$ 2,970.67	$ 24,269.83
16		$ 1,959.34			$ 1,959.34	$ 26,229.17
17		$ 2,007.21			$ 2,007.21	$ 28,236.38
18		$ 2,056.19			$ 2,056.19	$ 30,292.57
19		$ 2,106.30			$ 2,106.30	$ 32,398.87
20		$ 2,157.57			$ 2,157.57	$ 34,556.44
21		$ 2,210.02			$ 2,210.02	$ 36,766.46
22		$ 2,263.67			$ 2,263.67	$ 39,030.13
23		$ 2,318.56			$ 2,318.56	$ 41,348.69
24		$ 2,374.70			$ 2,374.70	$ 43,723.39
25		$ 2,432.12			$ 2,432.12	$ 46,155.51
Total	$ 21,904.70	$ 46,218.05	$ (250.00)	$ (21,717.24)	$ 46,155.51	$ 46,155.51

* Utility Rate Escalation Assumed to be 3.0%

I didn't believe their numbers….

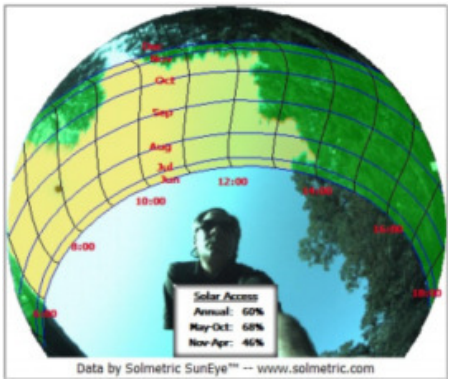
- So I made my own evaluation
- Looked at each month
  - What I would produce
  - What I would consume
  - Utility bill, incentive, and payment
- Based on the actual projections and historic energy
- My numbers basically matched theirs

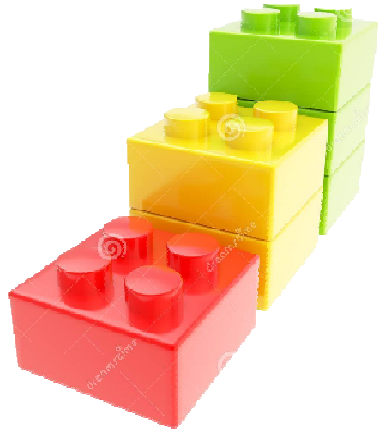
		Solar Generated	kWH Used	kWH Net	Incentive	Utility Bill	Payments	Cash Flow
1	1/1/2016	425	681	256	$ 175.74	$131.23	$150.81	($106.30)
0.1927	2/1/2016	520	730	210	$ 215.02	$140.67	$150.81	($76.46)
0.4135	3/1/2016	697	757	60	$ 288.21	$145.87	$150.81	($8.47)
7,725	4/1/2016	774	636	-138	$ 320.05	$122.56	$150.81	$46.68
8,381	5/1/2016	836	581	-255	$ 345.69	$111.96	$150.81	$82.92
$3,194.29	6/1/2016	835	603	-232	$ 345.27	$116.20	$150.81	$78.26
$1,615.02	7/1/2016	883	875	-8	$ 365.12	$168.61	$150.81	$45.70
$126.41	8/1/2016	825	728	-97	$ 341.14	$140.29	$150.81	$50.04
($230.45)	9/1/2016	615	730	115	$ 254.30	$140.67	$150.81	($37.18)
$1,258.16	10/1/2016	580	700	120	$ 239.83	$134.89	$150.81	($45.87)
$1,384.57	11/1/2016	391	680	289	$ 161.68	$131.04	$150.81	($120.17)
$1,384.57	12/1/2016	344	680	336	$ 142.24	$131.04	$150.81	($139.60)

- One year is shown, did this for 20 years with decreasing production and rising utility costs.

What was next?

- So, now I at least believed them.
- Paid the deposit
- On-site evaluation was performed
- Revisit the design and the numbers





Back to the drawing board

- We found a lot of shade on the lower south facing roof
- There were some obstructions (vents I JUST installed) on the 2nd story roof
- Had to find some new locations
- RGS redid all the numbers
- The new system was not as optimal as the first
  - More panels and lower output
- Oh, and we are now going to put it on the front of the house

			Solar Generated	kWH Used	kWH Net	Incentive	Utility Bill	Payments	Cash Flow
Year	1	1/1/2016	446	737	291	$ 184.42	$141.96	$189.70	($147.24)
Utility Rt	0.1927	2/1/2016	653	757	104	$ 270.02	$145.87	$189.70	($65.56)
PBI Rate	0.4135	3/1/2016	763	704	-59	$ 315.50	$135.69	$189.70	($9.89)
Total Generated	7,548	4/1/2016	683	601	-82	$ 282.42	$115.82	$189.70	($23.10)
Total kWH	9,846	5/1/2016	849	566	-283	$ 351.06	$109.16	$189.70	$52.21
Total Inc	$3,121.10	6/1/2016	738	875	137	$ 305.16	$168.61	$189.70	($53.15)
Utility Bill	$1,897.27	7/1/2016	746	1006	260	$ 308.47	$193.86	$189.70	($75.09)
Net Utility Bill	$442.78	8/1/2016	733	1552	819	$ 303.10	$299.05	$189.70	($185.65)
Cash Flow	($1,052.58)	9/1/2016	565	1190	625	$ 233.63	$229.25	$189.70	($185.32)
Net Meter Cash	$401.92	10/1/2016	593	617	24	$ 245.21	$118.88	$189.70	($63.37)
Savings	$844.70	11/1/2016	407	537	130	$ 168.29	$103.53	$189.70	($124.94)
Cum Savings	$844.70	12/1/2016	372	704	332	$ 153.82	$135.60	$189.70	($171.48)

New plan

- 28 panels (21 in front, 7 in back)

System Size:	**7.14 kW**
Modules: (28) Silfab - SLA 255 P	
Inverters: (28) Enphase - M215	
Year 1 Production:	**7,547 kWh**

- The output was lower and price was higher
- The evaluation still came back positive
- Utility bill + solar panel payments – incentive < current bill
  - Roughly cut my expense for electric in half year 1

Next steps

- I approved the plan
- They submitted engineering drawings to me and for permit
- RGS completed all incentive paperwork
- I was put on the waiting list for install
- I freaked out about how it would look

Install

- Panels showed up

Install

- First was getting the railing system installed
- Electrician started roughing in the wiring
  - He had two arrays to tie together

Install

- Roof penetrations

Install

- Micro inverters attached to the railing system behind each panel
- Panels were installed and connected to wiring harness

Install

- Single combiner and meter panel installed outside
- Connected to the utility feed from the street
- System was tested

Install

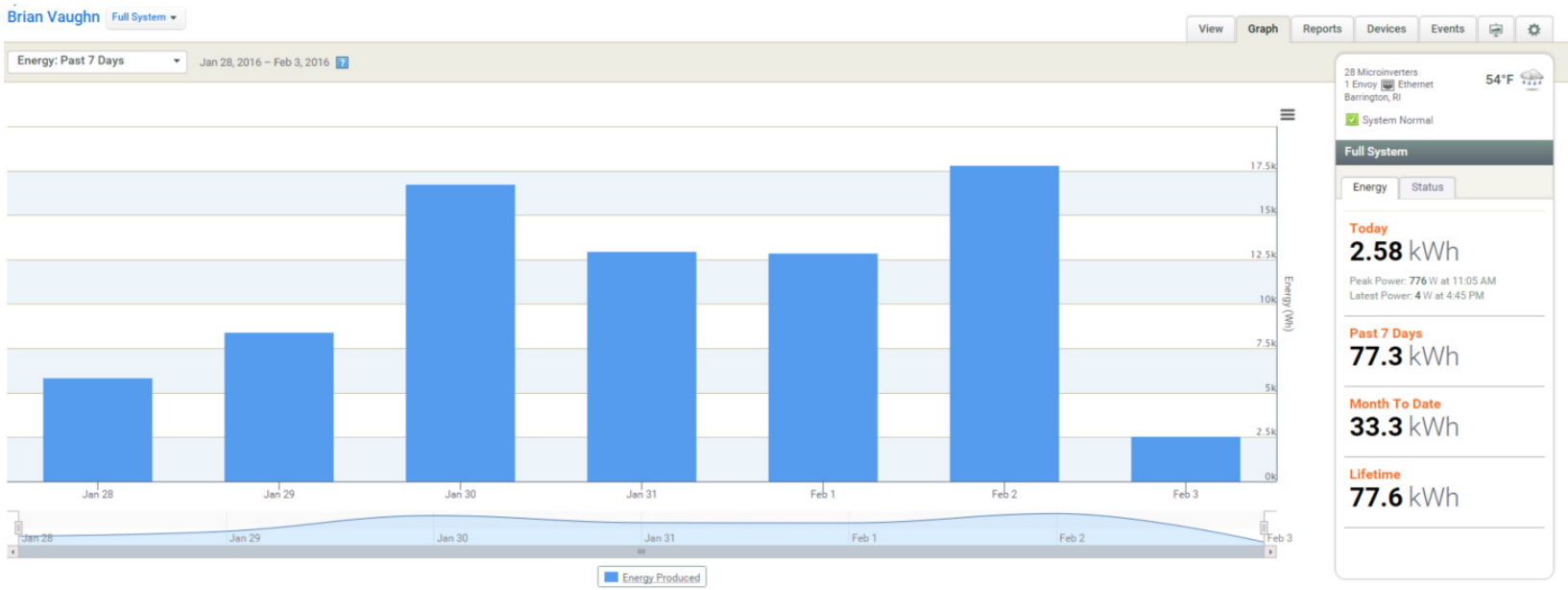
Before/After Picture

Installation Wrap up

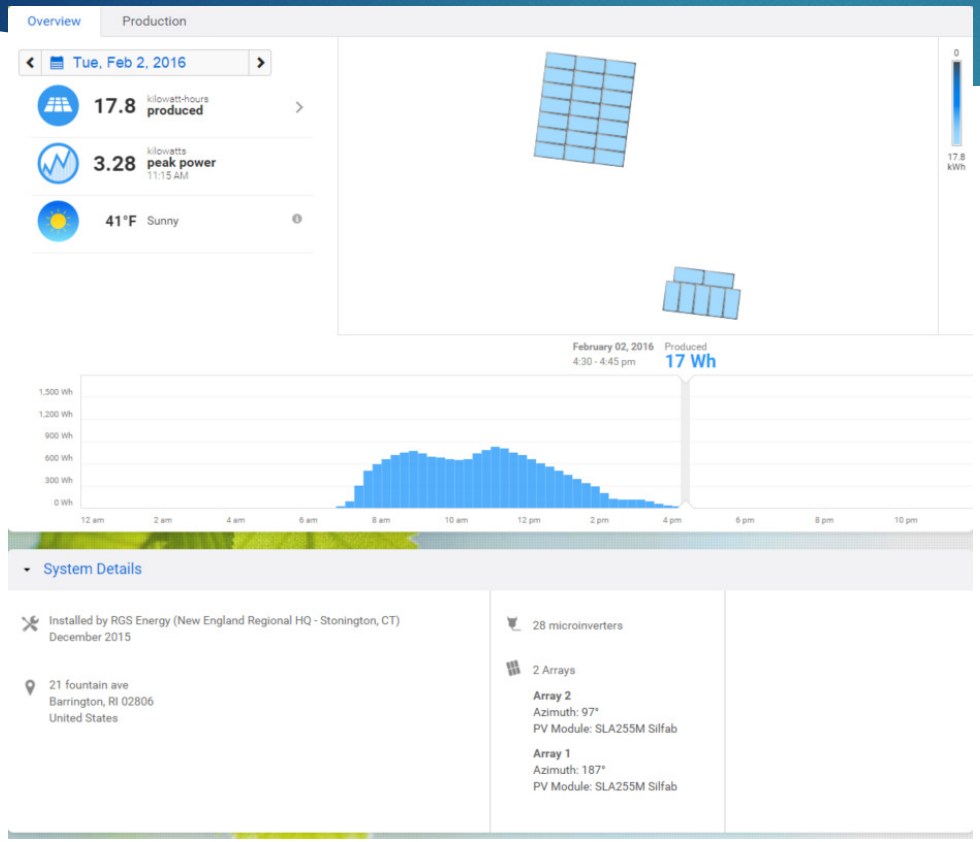
- Barrington Inspectors check out the system and sign permits
- RGS submits the Permission to Operate (PTO) paperwork to National Grid
- National Grid inspects the system and finalizes any connections
- Metering department comes out and installs a meter (FiT) or changes to net meter for a grant system.
- RGS can now show you how your system works

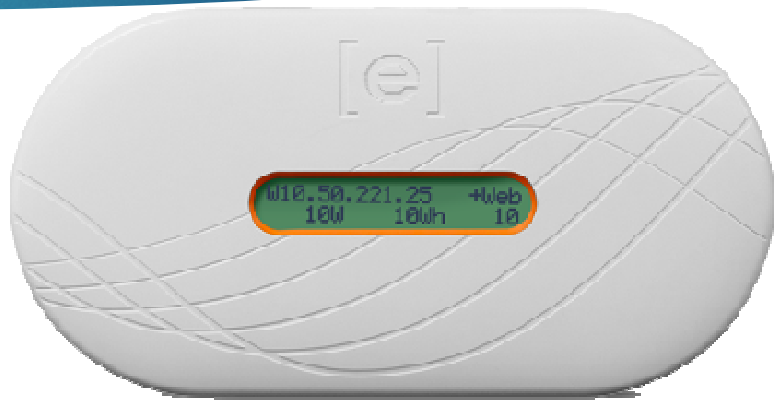
We are now online

- Went online January 28th

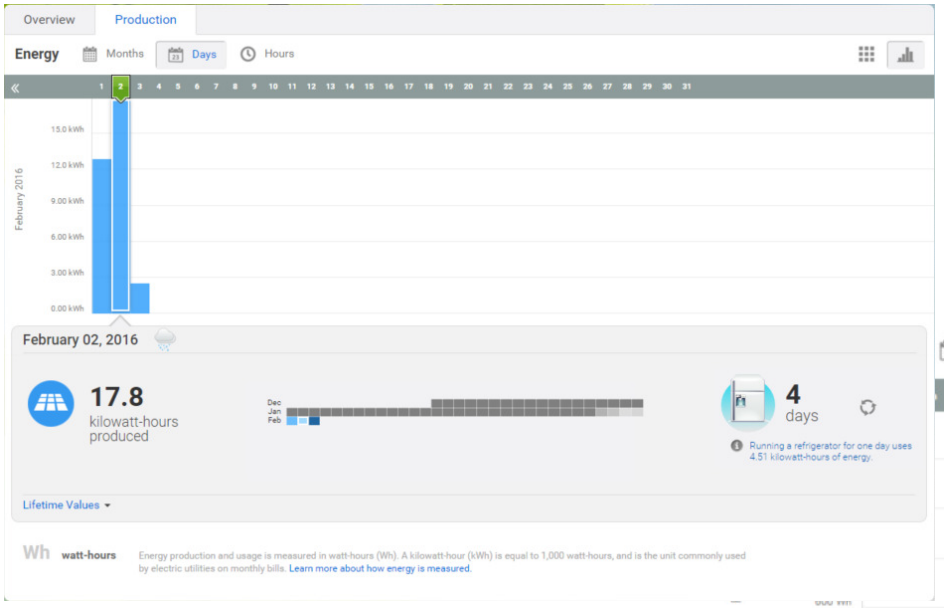


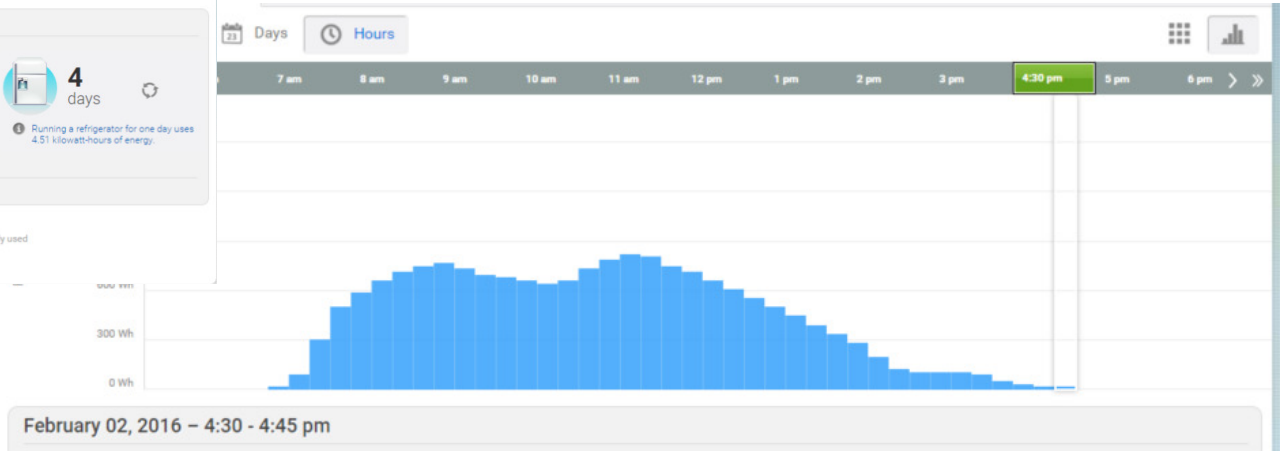
Enphase Monitoring





Enphase Monitoring





Enphase Monitoring

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Monthly Energy Production Report for Brian Vaughn

Enphase Energy maximizes your solar energy production and keeps you informed about your system. Your monthly energy report shows how your system performed and how much you contributed to offsetting the global carbon footprint.

Week	Peak Power	Energy Produced
01/01/2016 - 01/07/2016	0 W	0 Wh
01/08/2016 - 01/14/2016	0 W	0 Wh
01/15/2016 - 01/21/2016	0 W	0 Wh
01/22/2016 - 01/28/2016	2.95 kW	6.11 kWh
01/29/2016 - 01/31/2016	3.62 kW	38.2 kWh
	January 2016 Total:	**44.3 kWh**
	Previous Month Total:	**19 Wh**
	Year to Date:	**44.3 kWh**

For more details on these production results, please visit your Enphase® system.

Your **Carbon Offset** for this month: 67 lbs

You have offset the equivalent of: **1 Tree**

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